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April 1963
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PHOTOGRAPHIC INTERPRETATION REPORT

ANALYSIS OF HARDENED MRBM/IRBM AND IRBM LAUNCH SITES IN THE USSR

ARMY NAVY AIR FORCE CIA

S-8947

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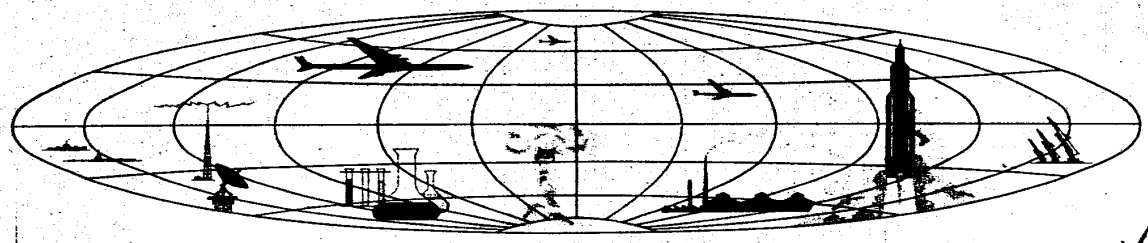

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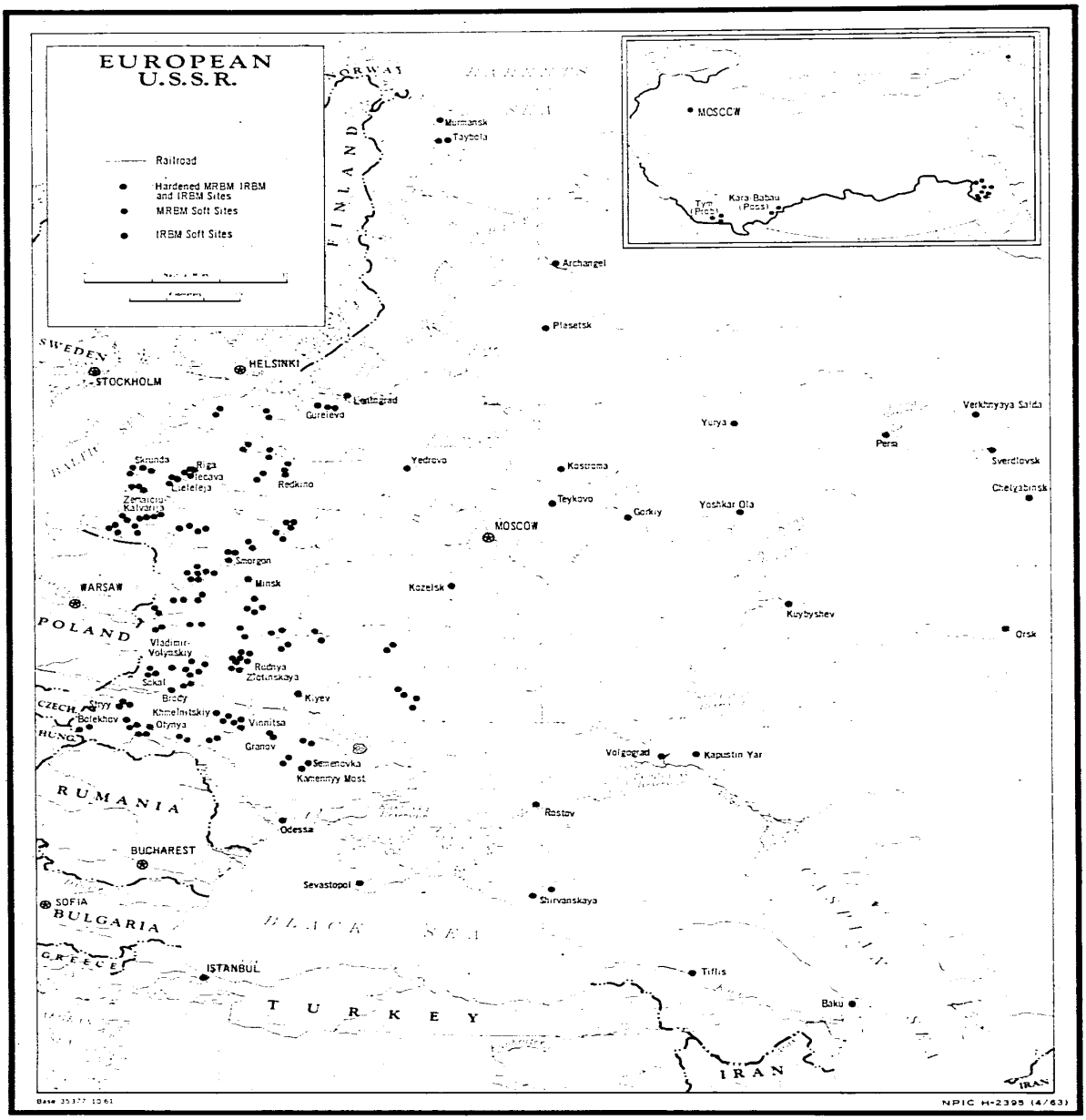

FIGURE 1. LOCATION OF DEPLOYED HARDENED MRBM/IRBM AND IRBM LAUNCH SITES.

INTRODUCTION

25X1D
25X1D

This report, based on KEYHOLE photography through [redacted] presents an analysis of 20 hardened MRBM/IRBM launch sites (19 confirmed and one probable) and 4 hardened IRBM launch sites

25X1D

(3 confirmed and one possible) which have been identified as of [redacted]. These sites are deployed at 22 separate locations in western and south-central USSR (Figure 1).* In addition, it deals with the two hardened launch facilities within launch Area 4C at the Kapustin Yar/Vladimirovka Missile Test Center (KYMTC), which are identified as the prototypes for the deployed sites. The one probable and one possible site referred to above are included in Table 1, but are not included in any further statistics or descriptions.

Eighteen of the 22 confirmed sites are deployed singly but are colocated with one or two soft MRBM or IRBM launch sites. Each of these hardened sites is from 5.5 nautical miles (nm) to 13.2 nm from a soft site, as exemplified by the Belokorovichi Complex (Figure 2). The remaining four hardened sites are deployed in pairs. One pair (Semenovka and Kamennyy Most) is near the city of Pervomaysk and is 56 nm from the nearest known soft MRBM launch site. The other pair is near Taybola in the northern USSR and is several hundred miles from a soft launch site. These four sites are the only ones at which there is a direct road connection to a nearby rail-to-road transfer point.

In this report and in NPIC/R-22/63, the designation of certain sites as hardened IRBM sites is based solely on their association with soft IRBM launch sites. The remaining hardened sites, which are deployed in pairs or in association with soft MRBM launch sites, are designated as hardened MRBM/IRBM launch sites. However, no physical characteristics have been isolated which would distinguish the hardened IRBM sites from the hardened MRBM/IRBM sites or would permit the identification of all the hardened sites as being one system or another.

All the hardened sites identified to date consist of a hard launch area (with two launch silos) and a soft support area which is located 1,400 to 9,000 feet (road distance) away. Both the launch area and support area are served by hard-surfaced roads and are built in thickly wooded areas at all locations where such vegetation exists. Single or double security fencing has been observed around the launch areas of many sites and is probably present at all sites, although not always evident on KEYHOLE photography. There has been security fencing observed around the support area of only one deployed site (Shirvanskaya).

*See NPIC/R-22/63 for a more recent tabulation of hardened sites identified in the USSR. 1

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FIGURE 2. BELOKOROVICHI LAUNCH COMPLEX ([redacted])

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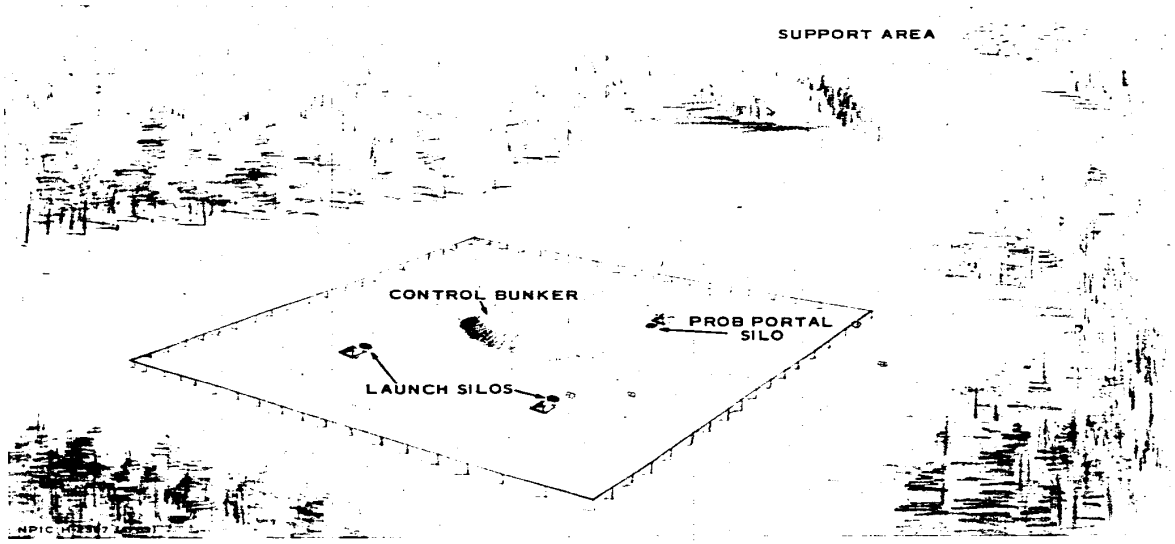

FIGURE 3. TYPICAL COMPLETE HARDENED MRBM/IRBM AND IRBM LAUNCH AREA.

LAUNCH AREA

The hardened MRBM/IRBM and IRBM launch area is constructed within an irregularly shaped clearing of three or more acres and eventually assumes the square or slightly rectangular configuration of the completed launch area (Figure 3). At all deployed sites, the four major components of the launch area are believed to be positioned with the same relationship to each other and to the main access road into the launch area. (This statement is based on the majority of the deployed sites which have been observed on good-quality photography, but cannot be positively determined at all of the sites.) These components, the positions of which are illustrated on Figure 3, are as follows: One underground central control bunker, which when completed is mounded over and covered with a protective material; two missile launch silos with associated structure; and one additional silo with associated structure, which probably serves as the portal by which personnel and equipment are admitted to and exit from the underground components of the facility.

At all sites the two missile silos are positioned 225 feet apart, and the probable portal silo is 260 feet from the closest launch silo. The main access road of each site enters the launch area on the side opposite to the positions of the launch silos. A hypothetical extension of the main access road through the launch area would bisect the control bunker and would pass directly between the two launch silos. At all the clearly defined deployed sites, the probable portal silo is positioned to the left of the main access road as it enters the launch area. This positioning of the probable portal silo is similar to that of prototype launch facility 4C-2 at the KYMTC but not to prototype launch facility 4C-1. These prototype facilities are described in a separate section of this report.

An additional component of undetermined function has been observed to the right of the access road entrance at seven of the deployed sites, and to the left of the access road at 4 C-1, KYMTC. Examination of these sites indicates that this unidentified structure probably is constructed after the major components have been completed and that it is not a part of the underground facilities of these sites. The absence of such a structure at one of the deployed sites (Kamennyy Most) that is believed to be complete leaves doubt as to whether or not it is a requisite part of all launch areas.

Because of the relationship between the access road and the components of the launch area, the azimuth of the access road as it enters the area has been arbitrarily chosen to indicate the orientation of the sites. The azimuth of each launch site is given in Table 1. However, there appears to be no basis whatsoever to associate the orientation of the sites with a possible direction of fire. In fact, the two hardened sites deployed near Taybola, although only 3.4 nm apart, are oriented in nearly opposite directions.

SUPPORT AREA

The support areas of the hardened launch sites are, in all but one case (Iecava), situated on or close to the main access road which serves the launch area. From 5 to 15 buildings have been observed in the various support areas, with at least 2 and no more than 10 of these being barracks-type buildings. This variance in the number of support buildings may be the result of construction status or of inequalities in photographic coverage. It is possible, however, that some of the hardened sites share the support facilities of the nearby soft launch sites. No function has been ascribed to any of the other buildings within the support areas, and there is no evidence of either drive-through or missile-ready buildings. The Sokal site is the only one at which the barracks-type buildings are located separate from the remaining support buildings.

In most cases the support area was present or partly constructed when the sites were first observed on KEYHOLE photography. This fact raises the possibility that the support buildings may be used initially to house the construction personnel employed at the launch sites.

CONSTRUCTION STAGES OF THE LAUNCH AREA

The hardened MRBM/IRBM and the hardened IRBM launch areas have been observed in various stages of construction on the KEYHOLE coverages between [redacted] 25X1D 25X1D [redacted] For convenience in reporting, the construction of the launch areas has been subdivided into three general stages, as follows:

[redacted]

25X1B

25X1B

Early Stage of Construction

Once the launch area has been cleared of existing vegetation, excavating is concentrated at four points within the clearing (Figure 4). The two excavations that will house the launch silos and associated structures are more or less circular and are located side by side, yet independent of one another. They range from 100 to 150 feet in diameter and probably are the deepest excavations in the launch area. The excavation for the probable portal silo and associated structure appears to be slightly larger (140 to 170 feet) in diameter than the launch-silo excavations but probably is not as deep. The excavation for the control bunker is in the center of the launch area and is the shallowest of the four excavations. Additional excavating is done within the launch area so that access may be had between the three silo positions and the control bunker. This is done to approximately the same level as the floor of the control-bunker excavation.

In the case of 21 of the 22 confirmed launch sites, the main access road used by construction personnel and equipment during the early stage and midstage of construction is the same road that provides access to the completed launch area. The lone exception is the Semenovka launch site, which was observed in the midstage of construction. When the main access road is present at a launch site, it is the most prominent if not the only road into the launch area and generally runs through or close to the launch support area.

Midstage of Construction

In the midstage of construction the various structures become apparent within the launch area excavations (Figure 4). The largest structure is the central control bunker measuring 145 to 155 feet by 70 to 80 feet (Figure 5), which is probably the first component to be constructed. It is actually a rectangular building built below ground level and eventually covered over. The flat roof of this structure appears to be at approximately the same level as the initial clearing that surrounds the excavations. Protruding from the left side of the control bunker is a tubular conduit that forks immediately into two sections, one of which leads toward each of the launch silos. These two conduits are also constructed below ground level but appear to be raised above the floor of the excavation. Because they are visible only on photography of excellent quality, these tubular connections between the control bunker and the launch silos have been observed at only two of the hardened launch areas (Semenovka and Otynya). Measurements at these two areas reveal that the two conduits have an outside diameter of approximately 20 feet and are of different lengths. The one that leads toward the launch silo on the left measures approximately 125 feet whereas that leading toward the right launch silo is approximately 150 feet. The actual junction of the conduits with the launch silos themselves cannot be determined. The visible portions of the conduits are shown on Figure 4.

The missile launch silos have been identified under construction at three of the MRBM/IRBM launch sites (Otynya, Shirvanskaya, and Semenovka). The silos are imaged on KEYHOLE photography as dark circular dots measuring approximately 20 feet in diameter. This dimension is believed to represent the inside

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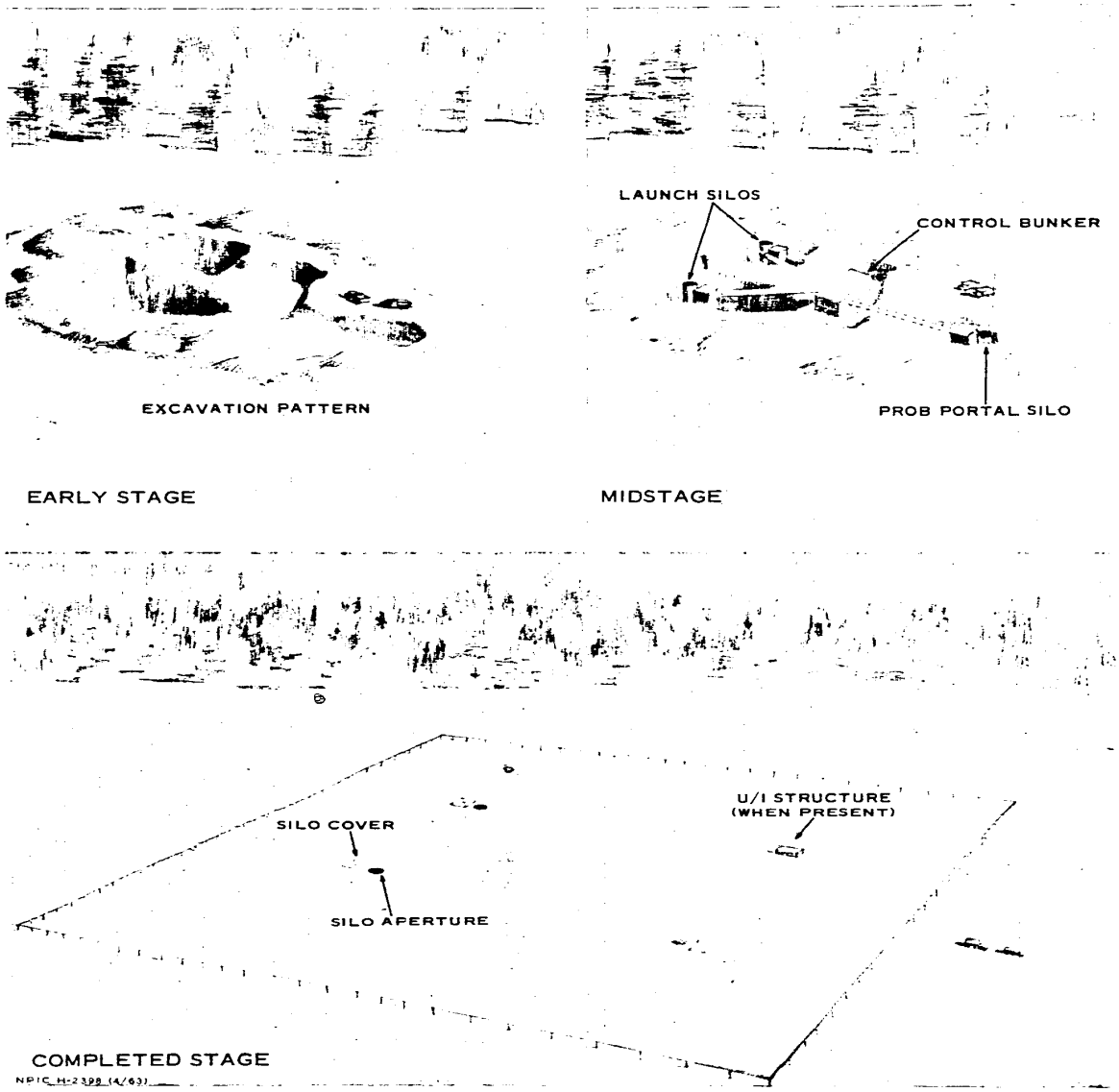


FIGURE 4. CONSTRUCTION STAGES OF A HARDENED MRBM/IRBM AND IRBM LAUNCH AREA.

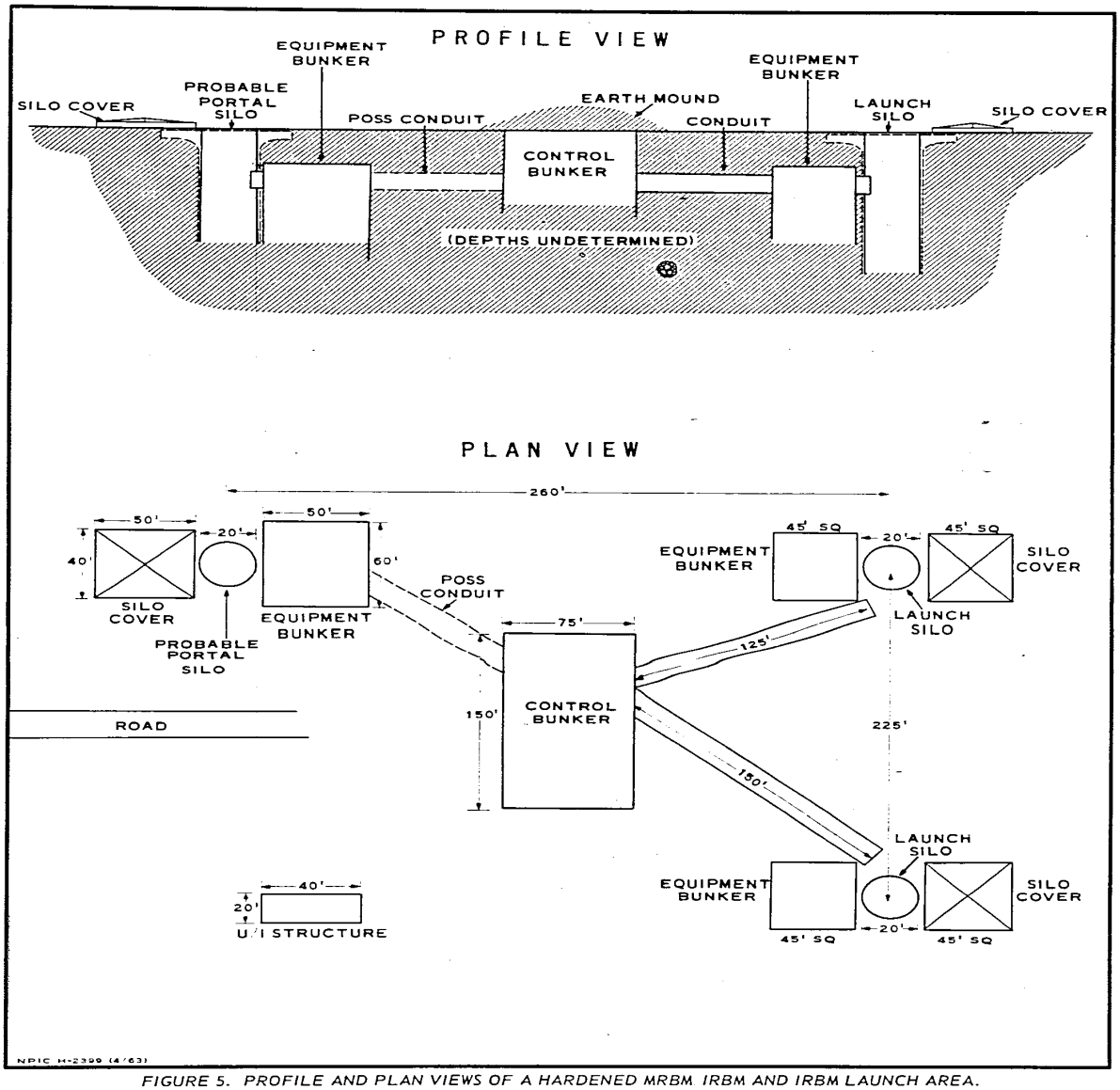


FIGURE 5. PROFILE AND PLAN VIEWS OF A HARDENED MRBM IRBM AND IRBM LAUNCH AREA.

diameter (launch tube) of the launch silos. The silo wall is not discernible, however, and may represent a portion of this dimension.

A flat-roofed structure, 45 feet square, is positioned immediately to the rear of each launch silo. The roof of this structure appears to be well below ground level. These structures are arbitrarily designated as equipment bunkers, although their exact function cannot be determined. These bunkers are positioned 225 feet apart (from center to center) as are the two launch silos.

Examination of the Shirvanskaya Launch Site indicates that there may be an expanded portion of the silos, which would be built as construction of the silos approached ground level. This feature, which is illustrated in the profile view of Figure 5, may be merely a thin concrete platform to reinforce the silo, or it may provide an additional area for personnel and equipment. Because it is only a possibility, it is illustrated with a dashed line.

The probable portal silo has not been observed in the midstage of construction. At the Otynya Launch Site, however, there is a poorly defined rectangular structure, approximately 50 by 60 feet, positioned within the excavation for this component. This structure is also designated as an equipment bunker although this designation is not meant to imply that its function is similar to that of the equipment bunkers associated with the launch silos. The most likely location of the probable portal silo in relation to this bunker would be in the middle of either the front or the rear side. The distance from the left launch silo to the front of this bunker is approximately 200 feet and to the rear of the bunker approximately 250 feet. Evidence from several launch sites indicates that the probable portal silo and equipment bunker are the last components of the launch area to be constructed. It is therefore likely that the underground portion of this component has not been seen in its entirety and may explain why there has been no visible connecting conduit between the probable portal silo position and the central control bunker, although logically there must be some sort of access between these two components. Because the excavation pattern within the launch area would easily allow for a tubular conduit such as those that serve the launch silos, a possible conduit has been included in the graphic portrayal.

At several of the launch areas that have been observed in the midstage of construction, there has been an indication of a clearing (but not an excavation) to the right of the access road entrance. This clearing, which gives the launch area a square configuration, may be merely to facilitate movement of construction equipment or it may be done in preparation for the unidentified structure that has been observed in this position. At several other sites in the late midstages, this structure may be either in place or under construction.

Late-to-Complete Stage of Construction

The late-to-complete stage of construction begins with the backfilling of the silo and control-bunker positions and continues until the launch area is complete. This stage includes the backfilling, the leveling off of the entire launch area, the mounding of the control-bunker position, and construction of three or four structures on the surface of the launch area (Figure 4).

When the earth has been backfilled around the three silos and their associated structures, the silo apertures are the only parts of these components that remain visible on KEYHOLE photography. These features appear as dark circular objects that have no height. The launch-silo apertures are each 20 feet in diameter and are 225 feet apart. These di-

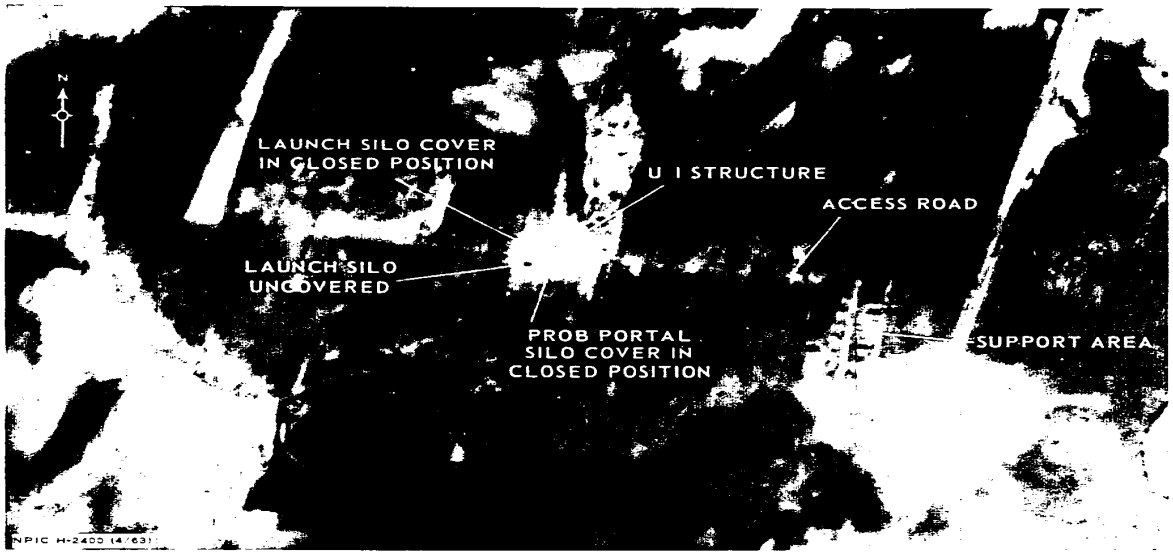


FIGURE 6. BOLEKHOV MRBM/IRBM LAUNCH SITE [redacted] 25X1D

mensions are the same as the ones given for the launch silos in the midstage of construction.

The probable portal silo aperture is also 20 feet in diameter and is 260 feet from the aperture of the left launch silo (Figure 5). This dimension would place the probable portal silo to the rear of its associated equipment bunker as observed in the midstage of construction.

Also visible at launch areas that are in a late-to-complete stage of construction is a concrete cover associated with each of the silo apertures. The top of each cover appears to be slightly pyramidal and to be raised slightly above the ground. The covers for the launch silos measure 45 feet square and are positioned forward of the apertures when in the open position. The cover associated with the probable portal silo appears to be rectangular (50 by 40 feet as measured at the Kamennyy Most Launch Site) and is positioned to the rear of the aperture.

As illustrated on Figure 6, the silo covers have been observed at varying distances from the apertures and at times in a closed position. The estimated maximum distance which the covers traverse from a closed to completely open position is approximately 50 feet. It has been assumed that some type of rail system allows the covers to slide from one position to another. However, the only photographic indication of such a rail system is found on coverage of the two hardened launch facilities at the KYMTC.

As mentioned previously, it is in the late stage or late midstage of construction that an unidentified surface structure becomes apparent to the right of the access road entrance at some of the deployed sites. For all practical purposes, this structure remains unidentified as to size,

25X1B

[redacted]

shape, or function because its characteristics have appeared dissimilar from one launch area to another. For the purposes of this *report, the unidentified structure at the Zemaiciu Kalvarija Launch Site is used to illustrate* this feature of the launch area. The unidentified structure at this area appears rectangular and measures approximately 40 by 20 feet.

25X1B

[redacted]

The internal road network of a completed site consists of a hard-surfaced road which circles the center mound and branches to the three silo positions and to the unidentified structure if it is present. This road is generally 30 to 40 feet wide and allows for a turning radius of approximately 100 feet. There is no apparent road access into the control-bunker position.

[redacted]

25X1B

Construction and Deployment Timing

Because of the varying quality of KEYHOLE photography and varying weather conditions, it is difficult to make an accurate assessment of the time span required for each of the three stages of construction. Geographic location and terrain may also affect the construction progress at the launch areas. By using the best photographic coverage, however, and by noting the minimum and maximum time spans during which certain sites remained in one of the construction stages, an estimate can be arrived at.

25X1B

[redacted]

launch sites were the first of the deployed sites observed in a completed state. On [redacted] both of these sites were in a late stage of construction but were probably not complete. The Kamennyy Most Launch Site was later observed in a completed state on [redacted] The Zemaiciu Kalvarija Launch Site was observed as complete on [redacted]

Therefore, the earliest completion date of any of the deployed sites is estimated to have been some time in [redacted] The subtraction of 18 months for construction gives [redacted] as the estimated start of deployment. This date is compatible with the status of the first sites which were covered by photography [redacted] At that time these four sites were in an early stage of construction.

PROTOTYPE LAUNCH FACILITIES

Launch Area 4C at the KYMTC is a double-fenced area approximately 4,200 by 1,500 feet which includes two prototype hardened MRBM/IRBM launch facilities and an operations center (Figure 7). It is served by a hard-surfaced road entering from the west which joins a north-south road approximately 30 feet in width. The north-south road is also hard-surfaced and provides access to both of the launch facilities. The northern launch facility is designated 4C-1 and the southern facility is 4C-2.

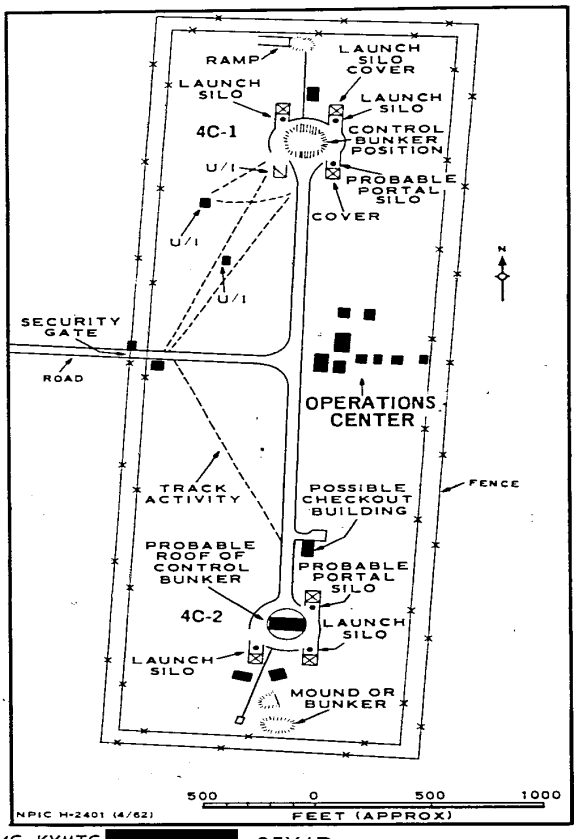
The operations center is located along the access road midway between the launch facilities. This area contains nine buildings of various dimensions. Two security buildings are located at the entrance to Area 4C.

The initial clearings for the two launch facilities were discernible on KEYHOLE photography of [redacted] Subsequent coverage of [redacted] afforded a first observation of 4C-1 under construction, but 4C-2 was only faintly visible through clouds and cloud shadow. At this time a vague excavation pattern was visible at 4C-1 and construction of the major components was probably underway. This would place the prototype facility in a probable midstage of construction at the same time that four deployed sites were observed in an early stage of construction.

Later KEYHOLE photography of [redacted] permitted observation of both launch facilities within Area 4C. By this time all components of Area 4C appeared near completion or complete. It is from this coverage that the following descriptions are taken.

LAUNCH FACILITY 4C-1

[redacted]



25X1D

25X1B

FIGURE 7. LAUNCH AREA 4C, KYMTC [redacted] 25X1D

[redacted]

25X1D

The control-bunker position of Launch Facility 4C-1 had been back-filled by [redacted] It appeared grayish in tone and level with the surrounding area. A loop road 30 feet wide with a turning radius of 100 feet circles the center portion and branches to connect with each silo position and with an unidentified object to the left of the access road. This object is poorly delineated and may be either a structure or earthen mound. Its exact size and shape cannot be determined. An unidentified structure was also observed in this position as early as [redacted] 25X1D

Several additional structures are associated with Launch Facility 4C-1. Immediately north of the two launch silos is a building 60 feet square. A possible pipeline or cable scar leads north from the launch silos along the west wall of this building for a distance of ap-

proximately 240 feet and connects with a probable semiburied bunker. A depressed ramp 50 feet in width extends from the west side of this bunker. Several unidentified vehicles parked adjacent to the western launch silo aperture and cover were also observed within Launch Facility 4C-1

LAUNCH FACILITY 4C-2

The four major components of Launch Facility 4C-2 are arranged with the same relationship to each other and to the access road as were the components of the previously described deployed sites. This facility, therefore, differs from 4C-1 in that the probable portal silo is positioned to the left of the access road. The three silo apertures with their associated covers and rail guards or supports are similar in appearance and dimension to the counterpart structures at 4C-1. The two launch silos are 225 feet from one another, and the probable portal silo is again 260 feet from the nearest launch silo.

25X1D The [redacted] coverage showed several vehicles parked to the right of the access road at 4C-2, but there is no indication of an unidentified structure or object that would be comparable to the one which forms the fourth corner of the rectangular configuration at 4C-1.

A hard-surfaced loop road 30 feet in width circles the control bunker position and branches to the three silo positions. Within the loop road there is a dark rectangular object measuring 145 by 70 feet. This object probably is the roof of the control bunker itself, indicating that construction of this facility is not as far advanced as Launch Facility 4C-1.

Several additional structures are associated with 4C-2. A building approximately 70 by 50 feet is situated just south of the launch silos, and a bunkered structure lies an additional 100 feet to the south. A pipeline or cable scar extends from the loop road to a small structure 500 feet to the southwest. Another pipeline or cable scar runs from the cover of the western launch silo directly south for 165 feet to an unidentified structure. An additional possible bunker, 120 by 50 feet, lies about 450 feet south of the loop road. A possible checkout area located north of the launch facility is composed of a building 105 by 45 feet with an adjacent probable concrete apron.

Subsequent coverage of Launch Area 4C was not of a quality comparable with that of [redacted] The only appreciable change in the facilities was noted at the control bunker position of 4C-1. On coverage of [redacted] the center portion of Launch Facility 4C-1 appeared mounded and dark in tone; however, no apparent change was noted in Launch Facility 4C-2. 25X1D 25X1D 25X1D 25X1D

REPRESENTATIVE DEPLOYED SITES

A detailed description of six deployed hardened sites is presented in this section. These sites were selected because they were covered by good-quality photography and best illustrate the construction stages of hardened sites.

PERVOMAYSK LAUNCH COMPLEX

The Pervomaysk Launch Complex is situated generally south of Pervomaysk and contains two hardened sites* (Kamennyy Most and

*A third hardened site has been identified at the Pervomaysk complex. For details see NPIC/R-22/63.

FIGURE 8. PERVOMAYSK LAUNCH COMPLEX [redacted] 25X1D

Semenovka). A good road connects the launch sites and joins with a road leading directly to a rail-to-road transfer point (Figure 8). This transfer point is situated along the Pervomaysk-Beltsy rail line, 1.2 nm east of Kamennyy Most and 1.6 nm west of the Kamennyy Most Launch Site. The transfer point consists of a single rail spur approximately 2,400 feet in length along which are located at least three large warehouses and several open storage areas. A highway also connects the launch site with the cities of Pervomaysk and Geniyevka.

25X1D KEYHOLE photography of [redacted] reveals the Kamennyy Most Launch Site in a very early stage of construction; no evidence of construction activity was noted at the location of the other launch site. Later KEYHOLE coverage of [redacted] showed additional construction at the Kamennyy Most Site and the initial evidence of diggings at the Semenovka Launch Site. On KEYHOLE photography of [redacted] the latter launch site appeared to be in a midstage of construction and the other launch site to be near completion. On photography as late as [redacted] the Semenovka Launch Site still appeared to be in the midstage of construction.

25X1D
25X1D
25X1D
25X1D
25X1D

The Semenovka Launch Site (Figure 9) is situated at 47-58-45N 30-59-30E, 3.3 nm northwest of the village of Semenovka. It is composed of a launch area in a midstage of construction and an associated support area. The launch area, as determined from KEYHOLE coverage of [redacted] is composed of interlocking excavations in which a number of launch components are being constructed. A rectangular control building, which appears to be complete and measures 150 by 75 feet, is located near the center of the excavation. A tubular conduit protrudes from the western side of this building and divides into two conduits, each of which extends to a launch-silo position. The silos are located 150 feet northwest and 125 feet southwest, respectively,

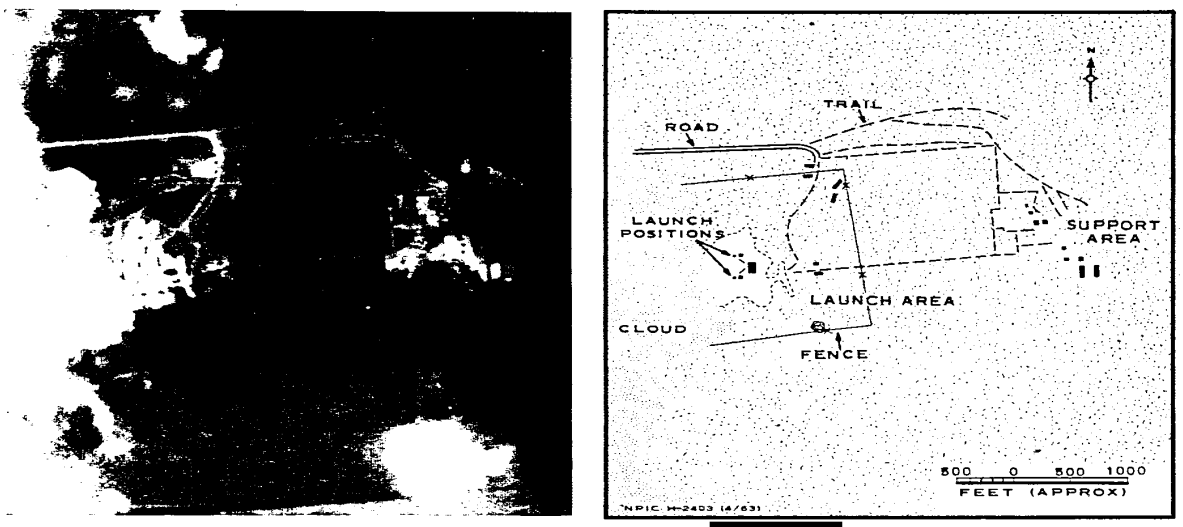


FIGURE 9. SEMENOVKA LAUNCH SITE [redacted] 25X1D

25X1D of the conduit junction. The two launch silos under construction appear on the [redacted] photography as black circular dots approximately 20 feet in diameter. Adjoining the east side of each launch silo is an equipment bunker 45 feet square. The roof level of these buildings appears to be well below the surface of the surrounding area.

A large spoil pile, which later may be used for backfilling the excavation, is located just north of the excavation. At least six probable construction buildings and two security buildings located near the gate also are within the fenced launch area. Access to the launch area during the construction phase is by trails entering from the north. When the launch site is completed, the permanent access road will most likely enter from the east at 90 degrees to the long axis of the control bunker in the same manner as found at other deployed hardened sites.

The support area is located approximately 2,000 feet east of the launch area. This area contains two barracks 150 by 40 feet and about six support or maintenance-type buildings. Trackage leads northwest from the support area and connects with a service road which now terminates near the launch area. No security fence is discernible in the immediate vicinity of the support area.

The Kamennyy Most Launch Site (Figure 10) is located at 47-58-30N 30-53-00E, 2.9 nm east of the village of Kamennyy Most, 1.5 nm east of the Pervomaysk-Beltsy rail line, and 4.4 nm west of the Semenovka Launch Site.

The launch area appears to be in a late-to-complete stage of construction on KEYHOLE photography of [redacted] It encompasses 25X1D an area 1,055 by 960 feet and is double fenced. The area within the inner fence is cleared and contains two launch silos, a probable portal silo, a mounded control bunker, three small

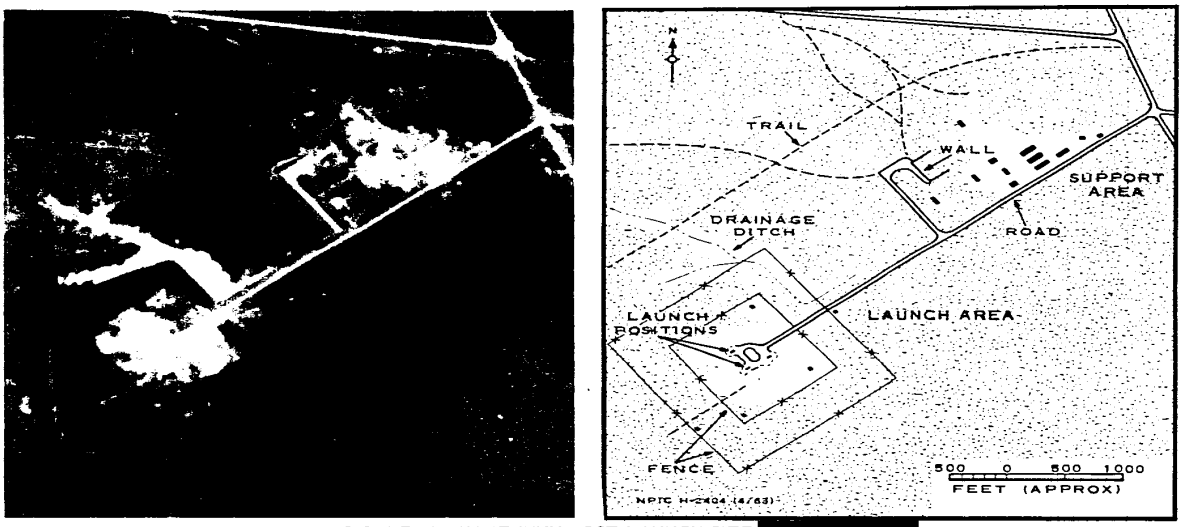


FIGURE 10. KAMENNYY MOST LAUNCH SITE [redacted] 25X1D

associated buildings, and a guardhouse located at the entrance. A hard-surfaced access road enters the launch area from the northeast and terminates in a loop around the mounded control bunker position. The earthen mound covering the control bunker is oval and is positioned near the center of the rectangular launch area. The two launch silos are positioned 225 feet apart in a line parallel to the long axis of the oval mound. The third silo, probably serving as a portal for personnel and equipment, is located on a line perpendicular to the axis of the launch silos and 260 feet northwest of the launch silo. A prepared area, serving as a base for the silo covers when in an open position, is located adjacent to each of the three silos. The covers, measuring approximately 45 feet square for the launch silos and 50 by 40 feet for the probable portal silo, appear to be in a semiclosed or closed position on photography of [redacted] 25X1D

The support area is located along the access road approximately 1,685 feet to the northeast. It consists of four barracks 140 by 35 feet and eight smaller support buildings. A prepared apron 280 by 90 feet is located along the southwest edge of the support area and 850 feet northwest of the access road. No building is associated with the apron; however, a large U-shaped wall, serving an undeterminable function, abuts its northeast end. No fence is discernible in the immediate vicinity of the support area.

SKRUNDA LAUNCH SITE

The Skrunda Launch Site was first identified on KEYHOLE photography of [redacted] 25X1D and observed again on KEYHOLE photography [redacted] 25X1D

The site is situated in a wooded area at 56-35-45N 21-49-15E, 9.5 nm northwest

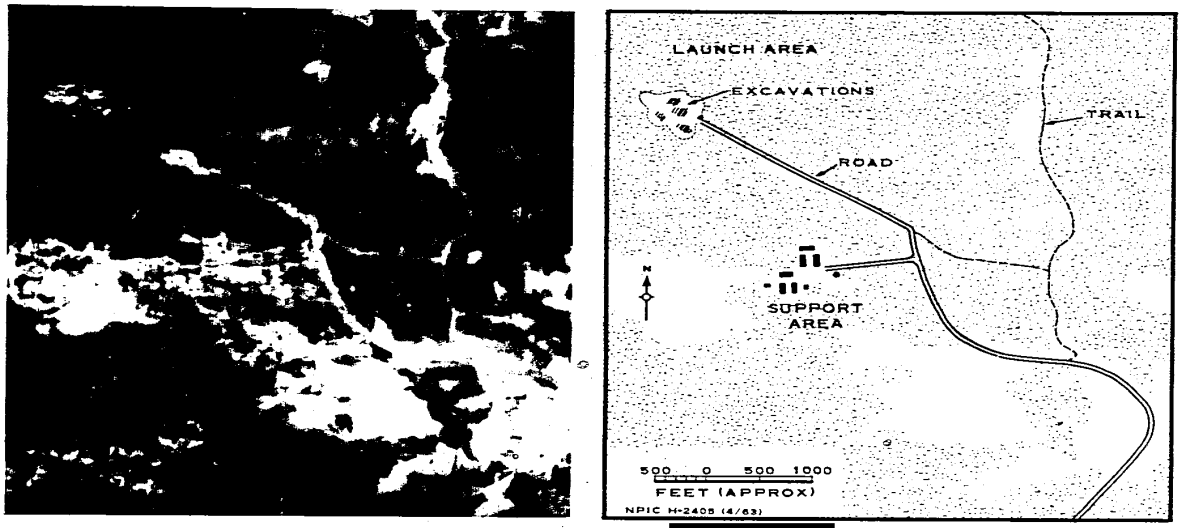


FIGURE 11. SKRUNDA LAUNCH SITE [redacted] 25X1D

of the Nigrande Launch Site, and 8 nm southwest of Skrunda. The nearest rail connection is located 3.5 nm to the north at a rail station (Stacija Rudbarzi). The access road leads primarily to Vainode Airfield, located 10 nm southeast of the site.

The site when last observed was in the early stage of construction and was snow covered (Figure 11). The launch area consists of two deep excavations with an outside diameter of 105 feet for the launch silos and a shallower excavation 220 by 180 feet centrally located in the clearing for the underground control bunker. Another excavation 150 feet in diameter, located just south of the control bunker position, is for the probable portal silo.

A support area is located 2,670 feet south-southeast of the launch area and contains six barracks-type buildings 180 by 40 feet and three smaller buildings, the largest of which is 80 by 20 feet.

TAYBOLA LAUNCH COMPLEX

The Taybola Launch Complex* is located in a semi-permafrost area generally north of Taybola and southeast of the town of Kitsa. The launch complex is served by a rail-to-road transfer point located 2.5 nm southeast of Launch Site No 1 and 2.8 nm south-southwest of Launch Site No 2 (Figure 12). This contains a rail spur and nine associated buildings and is connected directly by good road to the launch sites.

The launch complex was first seen and identified on KEYHOLE photography of [redacted] 25X1D 25X1D At that time Launch Site No 1 was observed in an early stage of construction with only the initial diggings apparent in the launch area, and Launch Site No 2 appeared to be in a midstage of con-

*A third hard site has been identified at the Taybola Complex. For details, see NPIC/R-22/63. 1/

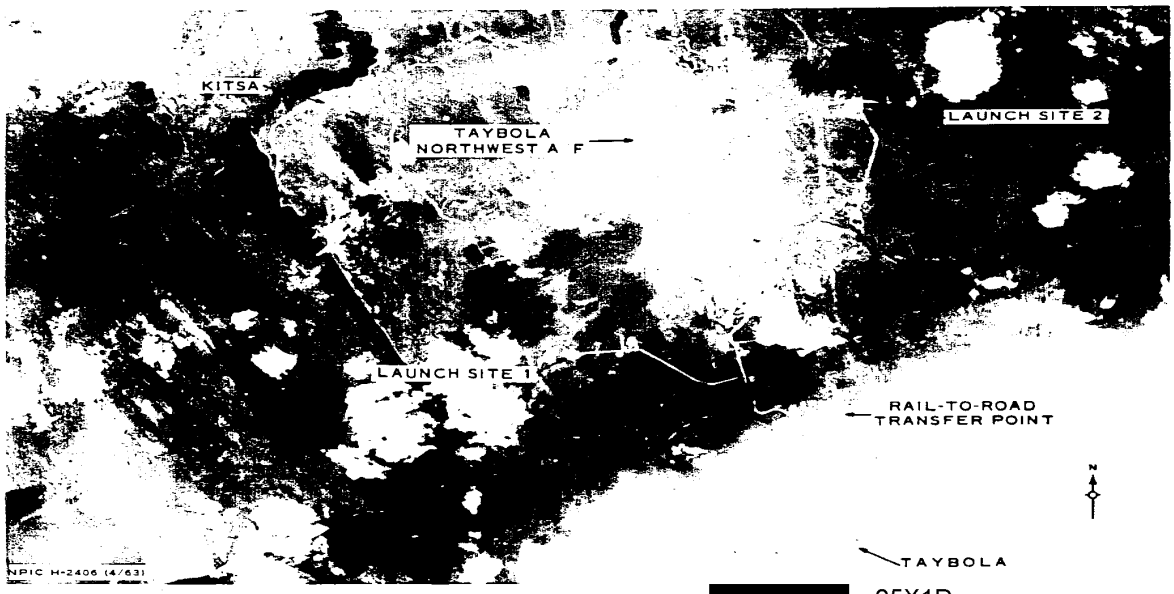


FIGURE 12. TAYBOLA LAUNCH COMPLEX [redacted] 25X1D

25X1D

struction. By [redacted] the excavations for the launch silos and control bunker were clearly discernible at Launch Site No 1 and the construction of these components was nearing completion at Launch Site No 2. On KEYHOLE

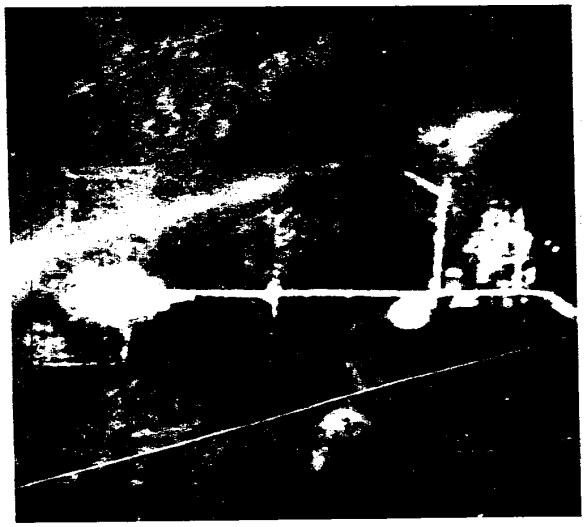
25X1D

photography of [redacted] Launch Site No 1 still appeared to be in the early stage of construction and Launch Site No 2 either in a late or complete stage.

Launch Site No 1 (Figure 13) is located at 68-28-15N 33-15-15E, 2.3 nm south-southwest of Taybola Northwest Airfield, 2.9 nm northwest of Taybola, and 3.4 nm southwest of Launch Site No 2.

The launch site contains a launch area in the early stage of construction with two excavations 150 feet in diameter and approximately 250 feet apart (center-to-center) aligned in a north-south direction. An excavation for a probable control bunker is located 200 feet east of the launch-position excavations, the long axis of which is perpendicular to the east-west access road. Two buildings are observed within the double-fenced launch area. One is located just west of the excavations; the other is situated on the east side and along the access road. An associated support area situated 2,800 feet to the east contains four barracks-type buildings 180 by 50 feet and at least three smaller buildings.

Launch Site No 2 (Figure 14) is located 3.4 nm northwest of Launch Site No 1 at 68-30-00N 33-23-00E. The launch area is double-fenced and in a late-to-complete stage of construction. It contains two launch positions approximately 225 feet apart positioned in a north-south line and a probable mounded control bunker. A probable portal silo is not



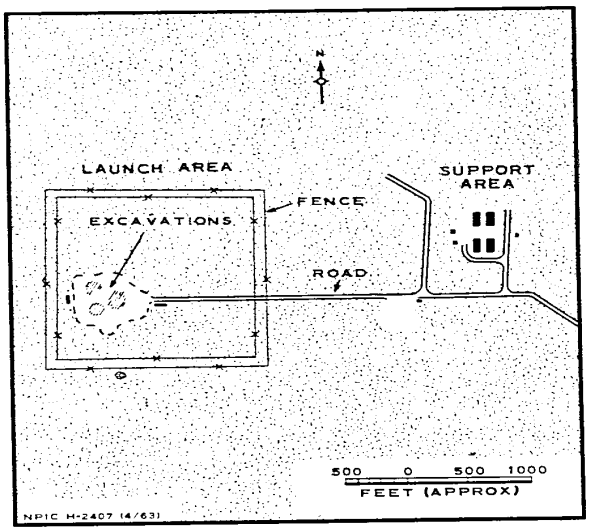
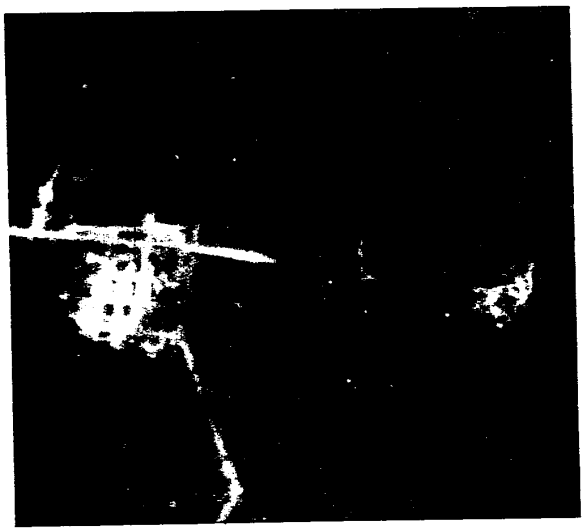


FIGURE 13. TAYBOLA LAUNCH SITE NO 1 [redacted] 25X1D



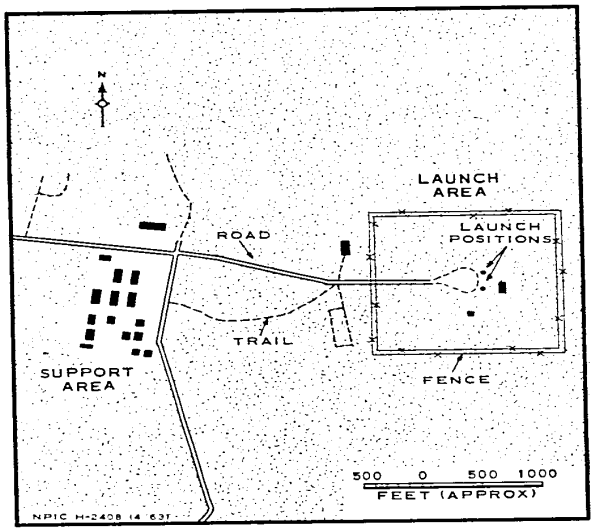


FIGURE 14. TAYBOLA LAUNCH SITE NO 2 [redacted] 25X1D

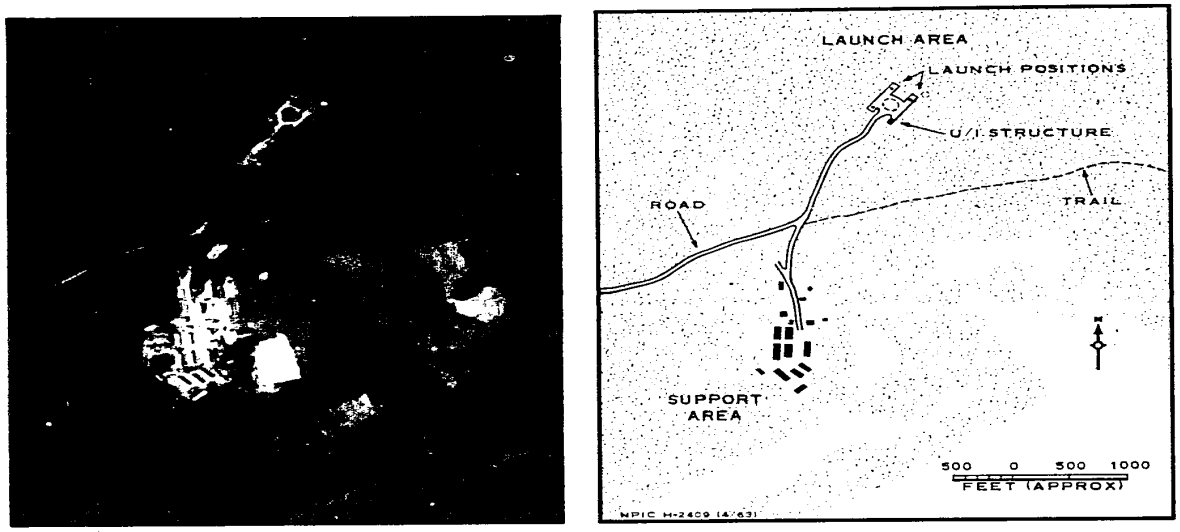


FIGURE 15. ZEMAICIU KALVARIJA LAUNCH SITE [redacted] 25X1D

observed in association with the other components, possibly because of the poor quality of the available photography. Two buildings are observed within the launch area. One is located just east of the launch positions; the other is situated south of the control bunker.

A road branches off either side of the access road at a point just west of the fenced launch area. The northern road leads to a building approximately 180 feet in length; the southern road terminates in a loop.

An associated support area situated 3,300 feet west of the launch area contains five barracks-type buildings, 180 by 50 feet, and at least ten small buildings. A building measuring 275 by 75 feet is located along the north side of the access road just opposite the barracks-type buildings.

ZEMAICIU KALVARIJA LAUNCH SITE

The Zemaiciu Kalvarija Launch Site was first identified on KEYHOLE photography of [redacted] and observed again on KEYHOLE photography of [redacted] 25X1D 25X1D

The site is located in a wooded area 6.6 nm east of Salantai Launch Site No 2 and 6.5 nm southwest of the town of Zemaiciu Kalvarija at 56-01-30N 21-53-30E. The nearest rail service is 5 nm to the southwest at the village of Grumbliai.

The site is in a late-to-complete stage of construction. The three silo positions are visible, although there is not sufficient detail to allow measurement of the silo apertures or silo covers (Figure 15). An unidentified structure approximately 40 by 20 feet is positioned

to the right of the access road and is the fourth corner of a rectangular configuration. The internal road network consists of a hard-surfaced road 30 to 40 feet wide with turning radii of approximately 95 feet. The road circles the mounded control bunker position and branches off to each of the silos and to the unidentified structure. There is no apparent access from this road network to the control-bunker position.

The support area is located along the access road approximately 2,700 feet southeast of the launch area. This area consists of nine barracks-type buildings 160 by 40 feet, at least three small buildings, and a possible service area containing a number of unidentified, widely dispersed structures.

TABLE 1. DATA ON HARDENED MRBM/IRBM AND IRBM LAUNCH SITES IN THE USSR

No	TDI Site Name & BE No	GMAIC Complex Name	Azimuth of Access Rd	Site Coords	Distance & Direction From TDI Name Town	Distance & Direction From Nearest MRBM or IRBM Site (GMAIC Name)	Distance & Direction to Nearest Poss Rail Unloading Point	Construction Stage of Site on Latest Usable Coverage	Construction Stage of Site on Earliest Coverage	No & Type of Bldgs in Support Area
1	Bolekhov* [redacted]	Dolina	[redacted]	49-06-45N 23-51-15E	2.8 nm N of Bolekhov	7 nm W of Dolina 1 Soft MRBM	1.5 nm NE, rail siding near Lisovitso	[redacted]	[redacted]	7 barracks & 5 other bldgs
2	Brody* [redacted]	Brody		50-06-00N 25-12-00E	2.3 nm NE of Brody	8.5 nm SE of Brody 1 Soft MRBM	2.3 nm SE, in Brody			4 barracks & 6 other bldgs
3	Gurelevo [redacted]	Moloskovitsy		50-25-30N 28-52-30E	2.5 nm SSW of Gurelevo	7.5 nm SW of Moloskovitsy 1 Soft MRBM	2.2 nm SW, at Veymarn Stantsiya			6 barracks & 7 other bldgs
4	Iecava [redacted]	Jelgava		56-33-15N 24-20-30E	5.6 nm SE of Iecava	9.4 nm SE of Jelgava 1 Soft MRBM	3.1 nm NNE, at Misa			6 barracks & 2 other bldgs
5	Kamennyy Most [redacted]	Pervomaysk		47-58-30N 30-53-00E	2.9 nm E of Kamennyy Most	4.4 nm W of Pervomaysk 2 Hardened MRBM/IRBM	1.6 nm W, rail siding			4 barracks & 8 other bldgs
6	Khmelnitskiy* [redacted]	Derazhnya		49-24-45N 27-08-56E	6.4 nm E of Khmelnitskiy	12 nm NW of Derazhnya 1 Soft MRBM	6.4 nm W, at Khmelnitskiy			3 barracks & 3 other bldgs
7	Lieleleja [redacted]	Zagare		56-24-30N 23-36-45E	2.2 nm W of Lieleleja	9.6 nm SE of Zagare 2 Soft MRBM	2.2 nm E, at Lieleleja			4 barracks & 3 other bldgs
8	Otynya* [redacted]	Nadvornaya		48-47-45N 24-50-15E	3.8 nm NNW of Otynya	8.5 nm NNE of Nadvornaya 2 Soft MRBM	3.8 nm SSE, at Otynya			7 barracks & 5 other bldgs
9	Rudnya Zlotinskaya [redacted]	Belokorovichi		51-04-30N 28-07-00E	4.6 nm SE of Rudnya Zlotinskaya	6 nm SE of Belokorovichi 1 Soft MRBM	1.8 nm N, at Malyy Divlin			5 barracks & 4 other bldgs
10	Semenovka [redacted]	Pervomaysk		47-58-45N 30-59-30E	3.3 nm NW of Semenovka	4.4 nm E of Pervomaysk 1 Hardened MRBM/IRBM	6 nm W, rail siding			2 barracks & 6 other bldgs
11	Sokal* [redacted]	Sokal		50-20-15N 24-26-00E	10.4 nm SSE of Sokal	5.5 nm SE of Sokal 1 Soft MRBM	4.4 nm E, near Sushno			4 barracks & 4 other bldgs
12	Stryy* [redacted]	Drogobych		49-16-30N 23-43-00E	5.6 nm WNW of Stryy	5.8 nm SSW of Drogobych 1 Soft MRBM	3.8 nm S, rail siding near Konyukhov			7 barracks & 4 other bldgs
13	Tayhola 1 [redacted]	Tayhola 1		68-28-15N 33-15-15E	2.9 nm NW of Tayhola	3.4 nm SW of Tayhola 2 Hardened MRBM/IRBM	2.5 nm SE, rail spur near Tayhola			4 barracks & at least 3 other bldgs
14	Tayhola 2 [redacted]	Tayhola 2		68-30-00N 33-23-00E	3.8 nm NNE of Tayhola	3.4 nm NW of Tayhola 1 Hardened MRBM/IRBM	2.8 nm SSW, rail spur near Tayhola			5 barracks & at least 10 other bldgs
15	Vinnitsa [redacted]	Zhmerinka		49-17-30N 28-20-15E	7 nm NW of Vinnitsa	9.8 nm NNE of Zhmerinka 1 Soft MRBM	7 nm SE, in Vinnitsa			4 barracks & 1 other bldg
16	Vladimir Volynskiy [redacted]	Lutsk		50-48-30N 24-42-30E	15 nm E of Vladimir Volynskiy	13.2 nm W of Sokal 1 Soft MRBM	1.6 nm SW, at Voynitsa			8 barracks & 6 other bldgs
17	Zemaiciu Kalvarija* [redacted]	Satoikini		56-01-30N 21-53-30E	6.5 nm SW of Zemaiciu Kalvarija	6.6 nm E of Satoikiai 2 Soft MRBM	5 nm SE, at Grumblini			9 barracks & at least 3 other bldgs
18	Redkino	Ostrov		57-24-30N 28-26-45E	6.2 nm NW of Redkino	10.8 nm SE of Ostrov 1 Soft MRBM	2.8 nm W at Shchepets Stantsiya			8 barracks & at least 3 other bldgs
19	Tym (Prob)	Kurgancha		39-35-15N 65-42-15E	6 nm SW of Tym	9.5 nm WSW of Kurgancha Soft MRBM	22.8 nm NNE, at Zirabulak			at least 6 buildings
20	Shirvanskaya	Maykop		44-25-30N 39-54-00E	5.3 nm NE of Shirvanskaya	8 nm SW of Kurdzhipskaya Soft MRBM	5.3 nm SW, at Shirvanskaya			6 barracks & 5 other bldgs

25X1D 25X1D 25X1D

TABLE 1. (Continued)

No	TDI Site Name & BE No	GMAIC Complex Name	Azimuth of Access Rd	Site Coords	Distance & Direction From TDI Name Town	Distance & Direction From Nearest MRBM or IRBM Site (GMAIC Name)	Distance & Direction to Nearest Poss Rail Unloading Point	Construction Stage of Site on Latest Usable Coverage	Construction Stage of Site on Earliest Coverage	No & Type of Bldgs in Support Area
21	Granov [redacted]	Granov	[redacted]	48-19-30N 29-29-15E	4.2 nm SW of Granov	6.8 nm SSW of Granov Soft IRBM	4.3 nm WSW, at Gaysin	[redacted]		6 barracks & 6 other bldgs
22	Skrunda* [redacted]	Nigrande		56-35-15N 21-49-15E	8 nm SW of Skrunda	9.5 nm SW of Nigrande Soft IRBM	3.5 nm N, rail station, Stacija Rudbarzi			6 barracks & 3 other bldgs
23	Smorgon* [redacted]	Smorgon		54-26-15N 26-18-15E	4.4 nm SW of Smorgon	5.8 nm S of Smorgon 1 Soft IRBM	3.6 nm NE, rail siding just SW of Smorgon			3 barracks & 2 other bldgs
24	Kara-Bahau* (Poss)	Sary Ozek		44-31-00N 77-58-45E	9.6 nm NE of Kara-Bahau	8.8 nm ESE of Kara-Bahau Soft IRBM	6.8 nm N, at station just SE of Anya-Bulak			6 barracks & at least 5 other bldgs

*Unidentified structure in launch area.

25X1A
25X1A
25X1A

TOP SECRET RUFF

NPIC/R-76/63

REFERENCES

PHOTOGRAPHY

25X1D

[redacted]

DOCUMENTS

1. NPIC. R-22/62, Deployment of MRBM and IRBM Launch Sites in the USSR, Mar 63 (TOP SECRET RUFF)

REQUIREMENTS

DIA. XX 58-62

CIA. RR/252/62

NPIC PROJECT

JN-250/62